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1973 VIRUS TOLERANCE RATINGS FOR CORN STRAINS Grown in the Lower Corn Belt

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Missouri Agricultural Experiment Station

1973 Virus Tolerance Ratings for Corn Strains Grown in the Lower Corn Belt¹

by

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Corn strains, growing in test plots in Missouri, were rated for tolerance to naturally occurring virus symptoms. Inbred lines, single and double cross hybrids, and synthetic strains were planted on plots at the Bonacker Farm near House Springs in Jefferson County and at the Delta Center near Portageville in Pemiscot County.

The plots, hand planted, consisted of 20 plants of each strain, spaced 1 foot apart, within the row. Each experiment had three replications.

Planting dates were delayed until late May to increase the chance for a higher level of natural infection. Johnsongrass was abundant in the area of the testing site at House Springs. In the immediate area of the testing site at the Delta Center, more johnsongrass was in evidence than in the previous 2 years.

Virus ratings were made August 10 at the Delta Center and July 11 and August 8 at House Springs. Plots were rated on a scale from 1 (no symptoms of virus infection) to 9 (complete susceptibility). Data reported are the averages of the three replications for each entry. The number of plants showing symptoms was used to compute percentage of infected plants.

During the 1973 growing season, several leaf specimens were taken from corn plants with virus symptoms. These specimens were sent to Dr. Donald Gordon of Ohio Agricultural Research Development Center at Wooster, for confirmation, identification, and characterization of the virus.

The assays indicated that maize chlorotic dwarf virus (MCDV) was present at both Jefferson County and Pemiscot County locations. The assays also revealed that MCDV was more abundant than was maize dwarf mosaic virus (MDMV). It is likely that MCDV has been present at both locations for some time.

Leaves infected with MDMV have a typical mosaic pattern whereas leaf tissue infected with MCDV shows tertiary vein clearing. This clearing is evident, especially when the tissue is held to the light; parallel veins appear more prominent. Both viruses have johnsongrass as an alternate host. MDMV is transmitted from infected johnsongrass to corn by the leaf aphid whereas the vector for MCDV is the leaf hopper, *Gaminella nigrifrons*. Among corn strains, differential response to the two viruses was not detected.

Virus Ratings

The 1973 average virus ratings at the Delta Center were considerably higher than in previous years. This increase was attributed in part to a greater amount of johnsongrass in the immediate area of the testing site. Comparison of virus ratings for two single crosses, one susceptible and one tolerant to virus over a 6-year period, are given in table 1. At House Springs the ratings were about the same for the susceptible strain as in previous years but the tolerant strain was somewhat less.

Coefficients of variation, mean virus ratings, and average percentages of infected plants for the various experiments are presented in table 2.

Experiments V-3 and V-4 consisted of the same strains tested at House Springs and the Delta Center, respectively. Likewise other pairs of experiments involving the same strains were V-5 and V-6, V-7 and V-8, V-9 and V-10, V-11 and V-12, and V-13 and V-14. In most instances the mean virus ratings and the mean percentage of infected plants were higher at the Delta Center than at House Springs. Coefficients of variation were always higher for percentage of infected plants than for virus ratings. Some experiments had lower coefficients of variation than others. The magnitude of the coefficient of variation is believed directly related to the intensity and distribution of the virus infection within an experiment. The amount of infection is directly related to the amount of johnsongrass in the area of the testing site.

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TABLE 1. — Comparative virus ratings¹ over a 6-year period at two locations for two single crosses, one susceptible and one tolerant to virus

Single cross	1968	1969	1970	1971	1972	1973	Average
Jefferson County							
Mo5 × H55	8.00	8.20	7.30	7.60	7.00	7.00	7.51
Mol4W × Oh7B	1.67	5.81	4.00	4.70	2.33	1.30	3.30
Pemiscot County							
Mo5 × H55	4.67	6.33	5.33	7.00	3.67	7.00	5.67
Mol4W × Oh7B	1.35	1.00	1.70	1.00	1.00	2.30	1.39

¹Scale is from 1 (no symptoms) to 9 (complete susceptibility).

TABLE 2. — Means, virus ratings, percentage of infected plants, and coefficient of variations for experiments conducted in 1973

Experiment number	Location	Means		Coefficient of Variation	
		Virus rating ¹	Infected plants	Virus rating	Infected plants
			Percent		Percent
V-3 July 11	House Springs	2.1	74.6	42.0	34.0
August 8	House Springs	2.4	73.1	33.0	38.0
V-4	Delta Center	2.4	69.0	22.0	25.0
V-5 July 11	House Springs	1.6	55.0	11.0	29.0
August 8	House Springs	1.8	39.2	18.0	21.0
V-6	Delta Center	2.1	50.1	26.0	37.0
V-7	House Springs	2.0	16.5	42.0	87.0
V-8	Delta Center	3.2	34.9	33.0	46.0
V-9	House Springs	2.9	26.2	34.0	56.0
V-10	Delta Center	3.5	27.8	41.0	68.0
V-11	House Springs	3.3	34.1	23.0	35.0
V-12	Delta Center	3.9	35.3	47.0	61.0
V-13	House Springs	4.3	56.6	25.0	34.0
V-14	Delta Center	4.8	57.6	26.0	31.0

¹Scale is from 1 (no symptoms) to 9 (complete susceptibility).

Commercial Hybrids

Virus ratings and the percentage of infected plants for commercial hybrids and three check hybrids tested at House Springs are given in table 3 and at the Delta Center are shown in table 4. A number of commercial hybrids have acceptable levels of tolerance with virus ratings ranging from 1.0 to 3.0.

In general, those hybrids that had a high level of tolerance to the viruses at House Springs were also tolerant at the Delta Center.

Uniform Inbred Line Evaluation

A uniform test of new inbred lines sponsored by the North Central Corn Breeding Research Committee was rated at House Springs (table 5) and the Delta Center (table 6). Many of the lines in this test had not been previously rated for virus symptoms. Several of the inbreds from the Arkansas Agricultural Experiment Station had high levels of tolerance at both test sites. Early maturing inbreds with tolerance were MS100 and ND376. Other lines with tolerance were Mo20W, N160, Oh513, and Mo(Mo22 × A251)S₈.

Open End Test of Inbred Lines

The Southern Corn Improvement Conference sponsored an open end test of inbred lines. These were rated for virus tolerance at House Springs (table 7) and the Delta Center (table 8). Open end

test included new inbred lines that had not been previously tested over a large area, but had been tested by a breeder at a limited number of locations. Open end testing identifies new inbred lines with high tolerance to virus. Many of these lines had been previously screened for virus symptoms.

Inbreds with high levels of tolerance were Tx466, Mo20W, Ky72:1260, and Mo18W. Two inbreds Mp72:363 and Mp68:616 had a higher virus rating at the Delta Center than at House Springs. If this difference is real, it might be due to a differential response as a result of the environment interacting with the viruses that infected these plants.

Uniform Test of Inbred Lines

A uniform test of 10 inbred lines sponsored by the Southern Improvement Conference was grown at House Springs and at the Delta Center. Uniform test of inbred lines affords the opportunity of breeders, virologists, and plant pathologists to observe and compare ratings for the same inbred lines under several environments. The test at House Springs was rated July 11 (table 9) and August 8 (table 10). Although a range in virus ratings and percentage of infected plants was evident, no statistical differences were indicated. Virus ratings for these 10 lines at the Delta Center (table 11) demonstrated significant differences among lines but no significant difference for percentage of infected plants. Tx232, Mo18W, and Tx601 appeared to be the most virus tolerant at both locations. Ky226 appeared highly tolerant on the July 11 date at House Springs but dropped considerably on the August 8 date. The latter rating agreed with the rating at the Delta Center.

Uniform Test of Single Crosses

Six single crosses with a previously observed wide range in response to virus infection were grown at House Springs and at the Delta Center. Results of the virus ratings and percentage of infected plants for two rating dates at House Springs are reported in tables 12 and 13, and results for a single rating date at the Delta Center are shown in table 14. Tx601 × T105 was consistently the most tolerant whereas T218 × T13 was the most susceptible.

Because most of the cob pipe corn production is located in river bottoms where an abundance of johnsongrass may occur, the likelihood of a virus infection is high. A number of new cob pipe hybrids have been developed that have suitable cobs for the production of pipes. These new hybrids were grown at both House Springs and at the Delta Center, and the virus ratings are reported in tables 15 and 16.

Table 3. — 1973 virus ratings and percentage of infected plants for commercial hybrids plus several check hybrids. Rated August 8. Experiment V-9. Grown on the Bonacker farm near House Springs in Jefferson County, Missouri.

Hybrids	Virus ratings	DMRT*	Hybrid	Infected plants Percent	DMRT*
PAG 22413	1.0		PAG 22413	0.0	
Funk Exp 25601	1.0		Funk Exp 25601	0.0	
Mo14W x Oh7B**	1.3		PAG 22384	3.7	
PAG 22384	1.3		PAG 22404	3.7	
PAG 22404	1.3		McCurdy 17514	3.7	
McCurdy 17514	1.3		DeKalb 28514	4.0	
DeKalb 28514	1.3		Mo14W x Oh7B**	6.7	
Trojan X3524	1.7		Funk G4762	6.7	
PAG SX17A	1.7		Trojan X3524	7.3	
Northrup King Exp 1925	1.7		PAG SX17A	7.3	
Northrup King Exp 1924	1.7		Northrup King Exp 1924	8.7	
McNair X-233	1.7		Funk G4808	8.7	
Funk Exp 26327	1.7		Moews 303W	10.0	
Funk G4808	1.7		McNair X-233	10.3	
Funk G4762	1.7		Trojan X54	11.0	
Trojan X54	2.0		DeKalb 3.8117	11.3	
Pioneer 3179	2.0		Trojan MDM 111	11.7	
Pioneer 3147	2.0		Northrup King Exp 1925	12.0	
Moews Exp M7372	2.0		Acco AR20924	12.0	
Moews 303W	2.0		Moews Exp M7372	12.3	
McCurdy MSX85	2.0		Acco AR19094	12.3	
DeKalb 3.8117	2.0		Holden 1028	12.7	
Acco AR20924	2.0		McCurdy MSX85	13.0	
Trojan MDM 111	2.3		Pioneer 3179	14.0	
Stull 911	2.3		Hulting X8775	15.7	
Princeton SP935	2.3		Stull 911	16.7	
McCurdy 71-6	2.3		Funk Exp 26327	16.7	
IFS 103	2.3		Pioneer 3147	17.0	
IFS 102	2.3		Princeton SP935	17.7	
Hulting X8775	2.3		Holden 1020	18.0	
Holden 1028	2.3		IFS 101	18.3	
Holden 1020	2.3		IFS 103	18.7	
Stull 560W	2.7		DeKalb XL70	19.7	
Northrup King Exp 1923	2.7		Northrup King Exp 1923	20.7	
Northrup King Exp 1922	2.7		IFS 102	21.7	
IFS 502W	2.7		Stull 560W	22.3	
IFS 101	2.7		McNair X214	22.3	
DeKalb XL70	2.7		McCurdy 71-6	22.3	
Acco AR 19094	2.7		McNair X170	23.3	
Sieben 51SX	3.0		Moews 101W	24.0	
McNair X214	3.0		DeKalb Exp 382	24.0	
DeKalb Exp 382	3.0		Sieben 51XS	25.7	
Pfister 47	3.3		Northrup King Exp 1922	25.7	
NC+ 568S	3.3		NC+ 568S	27.3	
Moews 101W	3.3		Pfister 47	28.7	
McNair X170	3.3		MFA MDM 11	31.7	
Hulting X9861	3.3		Holden 1024	32.0	
Holden 1024	3.3		Hulting X9861	33.0	
Pioneer 3369A	3.7		McNair 73002	34.3	
Trojan X2722	3.7		Co-op S-318	34.7	
Pfister 76	3.7		IFS 502W	35.0	
Moews SM822	3.7		Hulting X9880	36.0	
MFA MDM 11	3.7		Holden 035B	36.3	
Hulting X9880	3.7		Pioneer 3369A	36.7	
Holden 035B	3.7		Moews SM822	36.7	
Co-op S-318	3.7		NC+ 77SX	38.0	
Stull Exp 8092	4.0		Cargill Exp 39351	38.0	
Princeton SX650	4.0		Hulting X877SC	38.7	
NC+ Exp 1271	4.0		Trojan X2722	39.3	
NC+ 77SX	4.0		Stull 809A	40.3	
NC+ 85SX	4.0		Pfister 76	40.7	
McNair 73002	4.0		Sieben 25XS	41.3	
McCurdy MSP888	4.0		US13**	42.0	
Hulting X877SC	4.3		Princeton SX650	42.7	
Co-op D-320	4.3		McCurdy MSP888	45.7	
Cargill Exp 39351	4.3		Stull Exp 8092	47.0	
Pioneer L3369A	4.7		NC+ 85SX	48.0	
Stull 809A	4.7		Sieben 27XS	49.3	
Sieben 27XS	4.7		NC+ Exp1271	49.3	
Sieben 25XS	4.7		Co-op D-320	50.7	
Pfister 74	4.7		Pfister 74	53.7	
Pfister 1035	4.7		Pioneer L3369A	70.0	
US13**	5.3		Pfister 1035	74.7	
H55 x Mo5**	7.0		H55 x Mo5**	95.0	

Coefficient of variation..... percent 34

Coefficient of variation..... percent 56

*Duncan's Multiple Range Test — Entries with the same line in common are not considered significantly different at the 5% level.

**Check Hybrids.

Table 4. — 1973 virus ratings and percentage of infected plants for commercial hybrids plus several check hybrids. Rated August 10. Experiment V-10. Grown at the Delta Center in Pemiscot County, Missouri.

Hybrids	Virus rating	DMRT*	Hybrid	Infected plants Percent	DMRT*
PAG 22413	1.0		PAG 22413	0.0	
Trojan X54	1.3		McCurdy 17514	1.7	
PAG 22404	1.3		PAG 22404	3.3	
PAG SX17A	1.3		PAG SX17A	4.0	
Acco AR20924	1.3		Trojan X54	5.0	
McCurdy 17514	1.7		Acco AR20924	6.3	
IFS 101	1.7		NC+ 56SS	7.0	
Funks Exp 26327	1.7		Funks Exp. 26327	8.7	
Trojan X3524	2.0		IFS 101	9.0	
PAG 22384	2.0		McCurdy 71-6	9.3	
Northrup King Exp 1924	2.0		IFS 102	11.3	
NC+ 56SS	2.0		Northrup King Exp 1924	12.3	
McCurdy 71-6	2.0		Pfister 74	12.7	
Acco AR 19094	2.0		PAG 22384	12.7	
Mol4W x Oh7B**	2.3		Sieben 51XS	13.7	
Sieben 51XS	2.3		Pioneer 3179	15.0	
Pioneer 3179	2.3		Cargill Exp 39351	16.3	
Pfister 74	2.3		IFS 103	16.7	
IFS 103	2.3		DeKalb 28514	17.0	
IFS 102	2.3		NC+ 85SX	17.3	
DeKalb 28514	2.3		Mol4W x Oh7B**	18.3	
Pioneer 3147	2.7		DeKalb 3.8117	18.3	
NC+ 85SX	2.7		Pioneer 3147	19.3	
IFS 502W	2.7		Princeton SX650	20.0	
Funks Exp 25601	2.7		Northrup King Exp 1925	20.7	
DeKalb 3.8117	2.7		Holden 035B	21.0	
Cargill Exp 39351	2.7		Trojan X3524	21.7	
Trojan X2722	3.0		IFS 502W	21.7	
Sieben 27XS	3.0		Acco AR19094	22.0	
Northrup King Exp 1925	3.0		Trojan X2722	22.3	
McNair X-233	3.0		Pfister 47	22.7	
Holden 035B	3.0		Stull 911	24.3	
Stull 911	3.3		Holden 1020	24.3	
Princeton SP935	3.3		Pfister 76	25.0	
Pfister 76	3.3		Moews SM822	26.0	
Northrup King Exp 1923	3.3		Northrup King Exp 1923	26.3	
Hulting X9880	3.3		Pfister 1035	26.7	
Holden 1020	3.3		Hulting X9880	27.0	
Funk G4808	3.3		Holden 1028	27.0	
Trojan MDM 111	3.7		Princeton SP935	28.7	
Princeton SX650	3.7		McNair X214	28.7	
Pfister 47	3.7		Moews Exp M7372	29.3	
Pfister 1035	3.7		Funks Exp 25601	29.3	
McNair X214	3.7		Stull Exp 8092	30.3	
DeKalb XL70	3.7		Stull 560W	31.3	
Stull Exp 8092	4.0		McNair X-233	31.3	
Stull 560W	4.0		Trojan MDM 111	32.0	
Northrup King Exp 1922	4.0		Northrup King Exp 1922	32.7	
Moews Exp M7372	4.0		Sieben 27XS	33.3	
Moews 303W	4.0		Sieben 25XS	33.3	
Moews SM822	4.0		Stull 809A	33.7	
Funk G4762	4.0		Moews 101W	34.0	
Sieben 25XS	4.3		Pioneer L3369A	34.7	
McCurdy MSP888	4.3		Moews 303W	35.3	
Co-op S-318	4.3		McCurdy MSP888	35.3	
Pioneer 3369A	4.7		Funk G4762	36.0	
Stull 809A	4.7		NC+ 77SX	36.3	
NC+ 77SX	4.7		DeKalb XL70	36.7	
Moews 101W	4.7		McCurdy MSX85	37.0	
MFA MDM II	4.7		Funk G4808	40.3	
McCurdy MSX85	4.7		Hulting X8775	42.7	
McNair X170	5.0		Pioneer 3369A	43.0	
Holden 1028	5.0		McNair X170	45.3	
DeKalb Exp 382	5.0		Hulting X877SC	45.3	
Co-op D-320	5.0		Co-op S-318	46.3	
Pioneer L3369A	5.3		McNair 73002	46.7	
NC+ Exp 1271	5.3		Hulting X9861	47.0	
Hulting X877SC	5.3		NC+ Exp 1271	47.7	
McNair 73002	5.7		US13**	51.7	
Hulting X9861	5.7		Co-op D-320	52.7	
Hulting X8775	5.7		Holden 1024	53.7	
Holden 1024	5.7		DeKalb Exp 382	54.0	
US13**	6.0		MFA MDM II	61.3	
H55 x Mo5**	7.0		H55 x Mo5**	89.3	
Coefficient of variation. percent 41			Coefficient of variation. percent 68		

*Duncan's Multiple Range Test — Entries with the same line in common are not considered significantly different at the 5% level.

**Check Hybrids.

Table 5. — 1973 virus ratings and percentage of infected plants for a uniform evaluation test of inbred lines sponsored by the North Central Corn Breeding Research Committee, Rated July 11. Experiment V-13. Grown on the Bonacker farm near House Springs in Jefferson County, Missouri.

Inbred line	Virus ratings	DMRT*	Inbred line	Infected plants Percent	DMRT*
Ark332	1.0		Ark332	0.0	
Oh513	1.0		Oh513	0.0	
Ark335	1.3		Ark335	4.3	
Ark327	1.3		Ark327	6.7	
Ark325	1.3		Ark325	7.7	
Mo20W	1.7		Mo20W	9.0	
Ark H-77	2.0		MS100	11.0	
Ark347	2.3		Ark H-77	14.7	
Ark339	2.3		Mo(Mo22 x A251) _S ₈	14.7	
Mo(Mo22 x A251) _S ₈	2.3		Ark347	20.0	
MS100	2.3		ND376	21.3	
Ark352	2.7		Ark339	24.3	
Oh7B**	2.7		N160	27.7	
ND376	2.7		Oh7B**	29.0	
N160	2.7		N139	29.7	
Mo(Mo22 x A251) _S ₈	3.0		E2891-1	31.0	
H95	3.0		E2891-3	32.7	
Ark345	3.3		N132	33.3	
Ark338	3.3		Ark345	35.7	
N141	3.3		Mo(Mo22 x A251) _S ₈	36.3	
E2891-1	3.3		R802A	37.7	
N139	3.3		N141	38.7	
Oh512	3.3		Ark338	41.3	
R802A	3.7		N142	45.0	
N142	3.7		A648	45.7	
R805	3.7		B14	46.3	
E2891-3	3.7		Oh512	46.3	
B14	4.0		Oh509A	49.7	
Oh509A	4.0		H95	53.7	
B77	4.0		R805	56.0	
N132	4.0		Mo72-73W:60	57.7	
W627C	4.3		Ark352	58.3	
A648	4.3		W627C	58.7	
B75	4.3		B77	59.0	
B70	4.3		BS14	59.0	
A660	4.3		N159	60.7	
MS141	4.7		W406A	63.3	
NDBB	4.7		MS214	64.0	
ND478	4.7		MS153	66.0	
MS1334	4.7		ND478	67.0	
Mo72-73W:60	4.7		B75	68.3	
Mo5**	4.7		B76	68.3	
N159	5.0		MS141	70.0	
E2891-2	5.0		B70	71.7	
ND405	5.0		MS1334	72.0	
MS214	5.0		W438	73.7	
W406A	5.3		W64A	74.3	
W64A	5.3		Oh51A	76.0	
Mo17	5.3		W739A	76.3	
MS153	5.3		Mo17	77.7	
ND480	5.3		E2891-2	78.0	
WF9	5.3		E43-26	79.0	
H98	5.3		ND405	79.3	
E43-26	5.3		NDBB	81.3	
Oh51A	5.3		WF9	82.0	
B76	5.3		Oh507	83.0	
BS14	5.3		A659	84.3	
MS142	5.7		H55**	84.7	
W462	6.0		B37	86.7	
A659	6.0		A660	89.0	
Oh507	6.0		ND480	89.7	
W438	6.3		B73	89.7	
H55**	6.3		MS142	90.0	
Oh43	6.3		W513	91.0	
W739A	6.7		H98	91.7	
W513	6.7		W462	96.3	
B37	6.7		Oh43	97.0	
B73	6.7		Mo5**	97.3	
Mo72-73W:57	7.0		Mo72-73W:57	100.0	
ND468	7.0		ND468	100.0	
Coefficient of variation percent 25			Coefficient of variation percent 34		

*Duncan's Multiple Range Test — Entries with the same line in common are not considered significantly different at the 5% level.

**Check Inbred Lines.

Table 6. — 1973 virus ratings and percentage of infected plants for a uniform evaluation test of inbred lines sponsored by the North Central Corn Breeding Research Committee. Rated August 10. Experiment V-14. Grown at Delta Center in Pemiscot County, Missouri.

Inbred line	Virus rating	DMRT*	Inbred line	Infected plants Percent	DMRT*
Ark347	1.7		Ark325	9.3	
Ark H-77	1.7		MS1334	9.7	
Ark339	2.0		Ark347	10.3	
Ark338	2.0		Ark H-77	11.0	
Ark332	2.0		Ark332	13.3	
MS141	2.0		MS141	14.3	
Mo20W	2.0		Oh513	15.3	
Oh513	2.0		Ark338	15.7	
Ark325	2.3		Mo20W	15.7	
A648	2.3		Ark339	17.7	
Mo(Mo22 x A251)S ₈	2.3		Ark335	19.0	
Ark335	2.7		ND376	19.3	
ND376	2.7		Mo(Mo22 x A251)S ₈	19.7	
MS1334	2.7		Oh7B **	23.7	
MS100	3.0		A648	24.0	
Oh512	3.0		Oh512	25.7	
Oh7B **	3.3		Oh509A	27.7	
Oh509A	3.3		ND478	30.0	
Mo(Mo22 x A251)S ₈	3.3		Mo(Mo22 x A251)S ₈	37.0	
ND478	3.7		MS100	38.3	
Ark352	4.0		BS14	43.3	
Mo17	4.0		E2891-2	48.0	
Ark345	4.3		Mo17	51.3	
N142	4.3		B77	52.0	
E2891-1	4.3		MS153	53.0	
Ark327	4.7		N142	54.7	
E2891-2	4.7		A659	56.7	
R802A	5.0		E2891-1	57.0	
Mo5**	5.0		ND480	58.0	
ND BB	5.0		B70	60.0	
A659	5.0		Ark327	60.3	
BS14	5.0		N139	61.3	
E2891-3	5.0		N160	61.7	
H95	5.0		Ark352	62.0	
ND405	5.3		MS142	62.0	
Mo72-73W:57	5.7		R805	64.3	
MS142	5.7		Mo72-73W:57	66.0	
B70	5.7		R802A	67.3	
B37	6.0		Oh51A	67.7	
ND480	6.0		B76	71.3	
R805	6.0		B75	71.7	
B77	6.0		E2891-3	72.0	
Oh51A	6.0		B37	73.3	
Mo72-73W:60	6.0		ND405	73.3	
MS153	6.3		Ark345	75.0	
B75	6.3		N132	75.7	
N132	6.3		H95	78.0	
B76	6.3		Oh507	78.3	
N160	6.3		W64A	78.7	
E43-26	6.7		ND BB	80.3	
Oh43	6.7		Mo72-73W:60	89.0	
Oh507	6.7		N141	89.7	
N141	6.7		H98	91.7	
N139	6.7		B14	93.7	
W64A	7.0		ND468	93.7	
N159	7.0		B73	97.0	
B14	7.0		N159	100.0	
WF9	7.0		Mo5**	100.0	
MS214	7.0		WF9	100.0	
A660	7.0		E43-26	100.0	
H55**	7.0		MS214	100.0	
B73	7.3		Oh43	100.0	
ND468	7.3		A660	100.0	
H98	7.3		H55**	100.0	
Coefficient of variation		percent 26	Coefficient of variation		percent 31

*Duncan's Multiple Range Test — Entries with the same line in common are not considered significantly different at the 5% level.

**Check Inbred Lines.

Table 7. — 1973 virus ratings and percentage of infected plants for inbred lines in the open end test sponsored by the Southern Corn Improvement Conference. Rated August 10. Experiment V-8. Grown at Delta Center in Pemiscot County, Missouri.

Inbred line	Virus rating	DMRT*	Inbred line	Infected plants Percent	DMRT*
Tx466	0.7		Tx466	0.0	
Mo20W	1.0		Mo20W	4.0	
Ky72:1260	1.3		Ark325	4.7	
Mo18W	1.3		Ky72:1260	9.7	
Ark325	1.3		Mo18W	10.3	
Ky72:1235	1.3		Ky72:1220	11.3	
SC277	1.7		Oh7B**	12.0	
Oh7B**	1.7		Ark335	13.0	
T141	1.7		T141	17.7	
Ky72:1220	2.0		Tx467	18.3	
Ky72:1254	2.0		SC78	19.0	
Ark332	2.0		Mp494	19.3	
SC78	2.0		Ky72:1235	19.3	
Ark335	2.3		SC277	20.0	
SC33	2.3		Mp72:363	20.7	
Tx467	2.3		Ky72:1254	21.3	
Mp494	2.3		SC332	21.7	
Tx465	2.3		Mp68:576	22.3	
T143	2.7		Tx465	24.3	
Mo(Mo22 x A251)S ₈	2.7		SC375	25.0	
Tx464	2.7		Tx464	25.7	
Mp68:576	2.7		SC357	26.7	
T240	2.7		Mo(Mo22 x A251)S ₈	27.0	
Mo(Mo22 x A251)S ₈	3.0		SC33	27.3	
SC332	3.0		Mo(Mo22 x A251)S ₈	29.3	
SC357	3.0		CM 111	30.7	
Mp72:363	3.0		T240	34.3	
SC375	3.3		Ark332	38.0	
T61 W.C.	3.3		Ark327	40.0	
Ark324	3.3		T220A	40.7	
Ark327	3.3		T143	42.0	
CM 111	3.3		T61 W.C.	42.3	
Tx727	3.7		Oh72-588	43.7	
Ky72:1246	4.0		SC353	47.3	
T220A	4.0		SC344	47.7	
SC353	4.0		Tx739I	49.0	
Mp68:616	4.3		Mp68:616	49.7	
Oh72-588	4.3		Ark324	50.0	
SC344	4.7		Mp72:352	51.0	
Tx739I	4.7		AA25	54.0	
Mo14W**	4.7		T101 V.R.	56.7	
Mp72:352	5.0		Tx727	57.0	
T101 V.R.	5.0		Ky72:1246	59.7	
AA25	5.3		T105	59.7	
T105	5.3		Mo14W**	65.0	
Ky72:1231	5.7		Ky72:1231	80.0	
H55**	7.0		H55**	92.0	
Mo5**	7.0		Mo5**	95.0	
Coefficient of variation. percent 33			Coefficient of variation. percent 46		

*Duncan's Multiple Range Test — Entries with the same line in common are not considered significantly different at the 5% level.

**Check Inbred Lines.

Table 8.—1973 virus ratings and percentage of infected plants for inbred lines in the open end test sponsored by the Southern Corn Improvement Conference. Rated July 11. Experiment V-7. Grown on the Bonacker farm near House Springs, in Jefferson County, Missouri.

Inbred line	Virus rating	DMRT*	Inbred line	Infected plants Percent	DMRT*
Mo20W	1.0		Mo20W	0.0	
Mo18W	1.0		Mo18W	0.0	
Mp72:363	1.0		Mp72:363	0.0	
Mp68:616	1.0		Mp68:616	0.0	
Mp494	1.0		Mp494	0.0	
Oh7B**	1.0		Oh7B**	0.0	
T240	1.0		T240	0.0	
Ark325	1.0		T220A	0.0	
Tx466	1.0		Ark325	0.0	
Mo(Mo22 x A251)S ₈	1.3		Tx466	0.0	
Ark335	1.3		Mo(Mo22 x A251)S ₈	2.7	
SC33	1.3		Ark335	4.0	
Ky72:1254	1.3		SC33	4.7	
CM111	1.3		Ky72:1254	5.7	
Tx727	1.3		SC78	5.7	
T220A	1.3		Ark332	6.0	
T141	1.3		T141	6.0	
SC78	1.3		Tx727	7.3	
T143	1.7		SC357	7.7	
SC332	1.7		T61 W.C.	8.3	
Ky72:1231	1.7		Mp68:576	8.7	
Mo(Mo22 x A251)S ₈	1.7	CM111	9.0		
SC357	1.7	Mo(Mo22 x A251)S ₈	10.7		
Mp68:576	1.7	Ark324	11.0		
T61 W.C.	1.7	SC353	11.0		
SC277	1.7	T143	12.0		
Ark324	1.7	Ky72:1260	13.3		
Ark327	1.7	SC332	14.0		
Ark332	1.7	SC277	14.3		
Ky72:1235	1.7	T101 V.R.	14.7		
Ky72:1260	2.0	Oh72-588	15.0		
Ky72:1246	2.0	Ky72:1235	15.3		
SC353	2.0	Ky72:1246	18.3		
Oh72-588	2.0	Ky72:1231	18.7		
T105	2.3	Ark327	19.0		
Mp72:352	2.7	Mp72:352	22.0		
SC344	2.7	T105	23.0		
T101 V.R.	2.7	AA25	23.7		
Tx739I	2.7	SC344	26.7		
AA25	3.0	Mo14W**	31.3		
Ky72:1220	3.0	Tx465	34.3		
Tx465	3.0	Tx739I	35.0		
Mo14W**	3.0	Ky72:1220	42.0		
Tx464	3.7	Tx464	43.3		
Mo5**	4.0	Tx467	51.0		
Tx467	4.0	SC375	53.3		
SC375	4.3	Mo5**	61.3		
H55**	6.0	H55**	84.3		

Coefficient of variation..... percent 42

Coefficient of variation... .. percent 87

*Duncan's Multiple Range Test — Entries with the same line in common are not considered significantly different at the 5% level.

**Check Inbred Lines.

Table 9. — 1973 virus ratings and percentage of infected plants for a uniform test of inbred lines sponsored by the Southern Corn Improvement Conference. First rating, July 11. Experiment V-3. Grown on the Bonacker farm near House Springs, in Jefferson County, Missouri.

Inbred line	Virus rating	DMRT*	Inbred line	Infected plants Percent	DMRT*
Ky226	1.5		T232	53.0	
Mo18W	1.6		Ky226	58.0	
T232	1.6		Mo18W	59.3	
CI90C	1.8		Ab28A	63.3	
Tx601	2.2		CI90C	75.0	
T105	2.2		SC301D	77.0	
SC229	2.4		Mp490	85.7	
SC301D	2.4		T105	86.3	
Ab28A	2.7		Tx601	88.0	
Mp490	2.9		SC229	100.0	
Coefficient of variation percent 42			Coefficient of variation percent 34		

Table 10. — 1973 virus ratings and percentage of infected plants for a uniform test of inbred lines sponsored by the Southern Corn Improvement Conference. Second rating, August 8. Experiment V-3. Grown on the Bonacker farm near House Springs, in Jefferson County, Missouri.

Inbred line	Virus ratings	DMRT*	Inbred line	Infected plants Percent	DMRT*
Tx601	1.8		Tx601	46.0	
T232	2.0		T232	59.7	
Mo18W	2.0		Mo18W	66.7	
Ab28A	2.2		Ab28A	72.7	
Mp490	2.2		SC229	76.7	
SC229	2.4		Mp490	77.3	
CI90C	2.5		Ky226	78.7	
T105	2.7		T105	79.3	
Ky226	2.8		CI90C	84.3	
SC301D	3.7		SC301D	90.0	
Coefficient of variation percent 33			Coefficient of variation percent 38		

Table 11. — 1973 virus ratings and percentage of infected plants for a uniform test of inbred lines sponsored by the Southern Corn Improvement Conference. Rated August 10. Experiment V-4. Grown at the Delta Center in Pemiscot County, Missouri.

Inbred line	Virus ratings	DMRT*	Inbred line	Infected plants Percent	DMRT*
T232	1.7		T232	41.3	
Mo18W	1.7		Mo18W	54.0	
SC301D	2.0		T105	58.3	
T105	2.1		SC301D	66.0	
Mp490	2.1		Mp490	67.0	
Tx601	2.3		Tx601	73.0	
Ab28A	2.7		Ky226	80.7	
Ky226	2.9		Ab28A	81.7	
SC229	3.1		SC229	82.7	
CI90C	3.4		CI90C	85.3	
Coefficient of variation percent 22			Coefficient of variation percent 25		

*Duncan's Multiple Range Test — Entries with the same line in common are not considered significantly different at the 5% level.

Table 12. — 1973 virus ratings and percentage of infected plants for a uniform test of single crosses sponsored by the Southern Corn Improvement Conference. First rating, July 11. Experiment V-5. Grown on the Bonacker farm near House Springs, in Jefferson County, Missouri.

Single cross	Virus rating	DMRT*	Single cross	Infected plants Percent	DMRT*
Mo20W x K55	1.2	I	Mo20W x K55	22.3	I
T232 x Mp412	1.3		T232 x Mp412	31.3	
T232 x T13	1.6		T232 x T13	48.0	
Tx601 x T105	1.7		Tx601 x T105	58.7	
CI21 x Mp490	1.8		CI21 x Mp490	74.7	
T218 x T13	2.3	I	T218 x T13	95.0	I
Coefficient of variation.....	percent	11	Coefficient of variation.....	percent	29

Table 13. — 1973 virus ratings and percentage of infected plants for a uniform test of single crosses sponsored by the Southern Corn Improvement Conference. Second rating, August 8. Experiment V-5. Grown on the Bonacker farm near House Springs, in Jefferson County, Missouri.

Single cross	Virus rating	DMRT*	Single cross	Infected plants Percent	DMRT*
Tx601 x T105	1.2	I	Tx601 x T105	20.0	I
Mo20W x K55	1.3		T232 x Mp412	20.3	
T232 x Mp412	1.4		Mo20W x K55	23.3	
CI21 x Mp490	1.5		CI21 x Mp490	30.3	
T232 x T13	1.7		T232 x T13	47.0	
T218 x T13	3.5	I	T218 x T13	94.3	I
Coefficient of variation.....	percent	18	Coefficient of variation.....	percent	21

Table 14. — 1973 virus ratings and percentage of infected plants for a uniform test of single crosses sponsored by the Southern Corn Improvement Conference. Rated August 10. Experiment V-6. Grown at the Delta Center in Pemiscot County, Missouri.

Single cross	Virus rating	DMRT*	Single cross	Infected plants Percent	DMRT*
Tx601 x T105	1.4	I	Tx601 x T105	30.0	I
T232 x Mp412	1.5		Mo20W x K55	35.7	
Mo20W x K55	1.6		T232 x Mp412	37.0	
T232 x T13	1.7		CI21 x Mp490	53.7	
CI21 x Mp490	1.9		T232 x T13	55.3	
T218 x T13	4.2	I	T218 x T13	88.7	I
Coefficient of variation.....	percent	26	Coefficient of variation.....	percent	37

*Duncan's Multiple Range Test — Entries with the same line in common are not considered significantly different at the 5% level.

Table 15. — 1973 virus ratings and percentage of infected plants for new pipe corn hybrids, four synthetics and two check hybrids. Rated July 11. Experiment V-11. Grown on the Bonacker farm near House Springs in Jefferson County, Missouri.

Strains	Virus ratings	DMRT*	Strains	Infected plants Percent	DMRT*
Mol4W x Oh7B**	1.0		Mol4W x Oh7B**	0.0	
71-83	2.0		71-54	13.0	
71-54	2.0		71-83	16.0	
BS2(Iowa)	2.3		71-65	16.3	
71-65	2.3		BS2(Iowa)	21.7	
71-115	2.7		71-101	22.0	
71-113	2.7		71-59	24.3	
ETo(M)C ₆ (Iowa)	2.7		71-7	25.0	
71-38	3.0		71-113	28.0	
71-101	3.0		ETo(M)C ₆ (Iowa)	28.0	
71-7	3.0		71-115	28.3	
71-59	3.0		MoSQA	32.0	
MoSQA	3.3		MoSQB	32.0	
MoSQB	3.7		71-111	36.0	
Mo Pipe 14	4.0		Mo Pipe 14	36.3	
71-60	4.0		71-105	43.7	
71-111	4.0		71-38	44.7	
71-75	4.3		71-47	48.3	
71-110	4.3		71-75	49.0	
71-105	4.7		71-60	55.3	
71-47	5.0		71-110	69.0	
H55 x Mo5**	6.7		H55 x Mo5**	81.0	
Coefficient of variation..... percent 23			Coefficient of variation..... percent 35		

Table 16. — 1973 virus ratings and percentage of infected plants for new pipe corn hybrids, four synthetics and two check hybrids. Rated August 10. Experiment V-12. Grown at the Delta Center in Pemiscot County, Missouri.

Strain	Virus ratings	DMRT*	Strain	Infected plants Percent	DMRT*
Mol4W x Oh7B**	1.3		Mol4W x Oh7B**	5.3	
71-115	2.0		71-115	10.3	
Mo Pipe 14	2.0		Mo Pipe 14	12.3	
71-65	2.3		BS2(Iowa)	14.3	
BS2(Iowa)	3.0		71-65	17.0	
ETo(M)C ₆ (Iowa)	3.0		71-38	21.7	
71-83	3.3		71-83	22.0	
71-38	3.3		ETo(M)C ₆ (Iowa)		
71-60	3.3		71-7	32.0	
MoSQB	3.3		71-111	32.3	
71-101	3.7		71-113	35.0	
71-7	4.0		71-101	37.7	
71-54	4.0		71-60	37.7	
71-47	4.3		MoSQB	39.3	
71-110	4.3		71-47	39.7	
71-113	4.7		71-59	39.7	
MoSQA	4.7		71-110	45.3	
71-59	5.0		MoSQA	46.3	
71-105	5.3		71-75	49.0	
71-111	5.3		71-54	49.3	
71-75	5.7		71-105	58.0	
H55 x Mo5**	7.0		H55 x Mo5**	93.3	
Coefficient of variation..... percent 47			Coefficient of variation..... percent 61		

*Duncan's Multiple Range Test — Entries with the same line in common are not considered significantly different at the 5% level.
 **Check Hybrids.

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